Boeing Commercial Airplane Group
P.O. Box 3707
Seattle, WA 98124-2207

October 16, 1997
B-B600-16272-ASI

Mr. Robert Swaim, AS-40
National Transportation Safety Board
490 L'Enfant Plaza S.W.
Washington, D.C. 20594

BOEING

Subject: TWA 800 - Wiring Short Circuits Reported to Boeing

Dear Mr. Swaim:

Recently you requested information regarding wire shorts, wire fires and wire types on 747 airplanes. The following information is provided in response to your request.

1. How many wiring short circuit events were reported to Boeing in 1996 ? If possible, locations and cause should be included, especially if due to FOD in the bundle.

Response: There was one reported wire insulation abrasion on the 747 in 1996. The operator reported that a burning smell was noted during cargo loading in the forward cargo compartment. Cargo loading system wiring was found damaged and shorted to ground below the cargo floor at station 650, below the aft right corner of a large ball mat. A wiring loom "P" clip was found broken enabling the wire to chafe against structure. A hole was found burned through the bottom angle of the cargo floor cross member, where the wiring clip attached, and charring was evident in the surrounding insulation blanket. Repairs were made.

2. How many wiring fires were reported in 1996. If possible, provide narratives for these.

Response: There were seven reported wiring fires on the 747 in 1996. A description of each event follows:

a. 747-200 reported on January 10, 1996

At seat 33K an electrical burning smell was noted. Investigation revealed a fluorescent lamp holder damaged/burned.

b. 747-200 reported on January 10, 1996

At seat 33H-K electrical burning smell was noted, investigation revealed a fluorescent lamp holder damaged/burned.

c. 747-400 reported on February 9, 1996

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The flight crew detected a burning smell and then noticed smoke in the flight deck of the airplane. The source was traced to window 1L. The smoke and heat increased in intensity so the window heat was turned off. Maintenance found the connection at the aft lower corner to window 1L burnt. The window was changed.

d. 747-100 reported on February 15, 1996

Cabin crew reported sparks coming from door 4 right electrical control panel on landing. Door 4 right PES/PSS control panel was removed. Flames came from wiring and PES/PSS switches. Flames were extinguished. Damage and fire contained inside control panel.

e. 747-400 reported on March 12, 1996

During flight an electrical burning smell was noted near seat 27G. The crew found the odor to be coming from the seat entertainment unit. The unit was shut down and the cables were disconnected from the seat entertainment unit. Maintenance investigation found the electrical cables to the seat were scorched. Prime cause was found to be the spring clip connector retainers were missing from 2 locations on the seat electronics box allowing vibration to affect the connections. The seat electronics unit and seat cables were replaced System checkout was good.

f. 747-200 reported on October 12, 1996

Wire bundle arcing and resultant fire at aft bulkhead of forward lower lobe cargo hold on a 747-200 freighter. This occurred with the airplane on the ground, during post C-check functional test.

Note: Portions of the damaged wire bundles were forwarded to Boeing for evaluation in determining the cause of the damage. The results of the analysis indicated the primary conductor(s) sustained mechanical or thermal damage prior to the application of electrical power.

g. 747-400 reported on November 1, 1997 (see response to question 1)

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The operator reported that a burning smell was noted during cargo loading in the forward cargo compartment. Cargo loading system wiring was found damaged and shorted to ground below the cargo floor at station 650, below the aft right corner of a large ball mat. A wiring loom "P" clip was found broken enabling the wire to chafe against structure. A hole was found burned through the bottom angle of the cargo floor cross member, where the wiring clip attached, and charring was evident in the surrounding insulation blanket. Repairs were made.

3. What was the type of wiring (Poly-X, Kapton, hybrid, etc.) used in W824 and W834 bundles installed in airplanes with line numbers between 630-639?

Response: W824 used BMS 13-51 (Kapton) wire in 747 airplanes with line numbers between 630 and 639.

W834 used BMS 13-48 (ETFE) wire in 747 airplanes with line numbers between 630 and 639

If you have any questions, please do not hesitate to contact me at any time.

Very truly yours,

John W. Purvis
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